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AUTHOR Jason, Leonard A.; And Others
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ABSTRACT

A project was developed to prevent problem behaviors in elementary school students. One of many projects initiated in recent years by the DePaul Mental Health Clinic, this project aims to create an ongoing, self-sustaining cmputer-assisted tutoring program at St. Mary of the Lake, a school located in Chicago's economically disadvantaged Uptown district. In the Comp-Tutor project, 6th- through 8th-grade students learn computer programming and tutoring skills and tutor 1st- through 4th-grade students. Most participants in the program had experienced academic or behavioral difficulties in school, and many of the tutors were reputed to be slow learners and disruptive students. However, program supervisors have enocuntered none of the rebellion or reluctance to learn that teachers often receive from troubled students. Most participants consistently exhibit cooperation and enthusiasm. During sessions, tutors spend 2' minutes working on their own programs and then spend the next 20 minutes helping younger students. Educational software used in the tutoring sessions is carefully selected, and teachers insure that the material is consistent with each child's educational needs. It appears that experience in the use of programming materials facilitates students' cognitive development and the tutoring experience enhances feelings of self-worth. Outcomes of the intervention suggest that projects such as this should be considered by mental health workers interested in making preventive, early interventions. (RH)

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Comprehensive Preventive School - Based Programs

Leonard A. Jason, Dev Nair, and Michelle Moore

DePaul University

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Not least among the problems faced by elementary-level educators today is this: Many more students exhibit serious difficulties in school adjustment than current resources allow them to treat, and still more exist whose troubles are less pronounced but have the potential to grow.

Several elements combine to make this problem seem almost insurmountable. A recent survey concluded that 30 percent of elementary school children have identifiable difficulties in school adjustment. Some of these difficulties-- low grades, poor attendance and limited classroom involvement-- are a source of concern to parents and educators. More obvious problems, such as disruptive classroom behavior, mar the educational experience not only for these high-risk students, but also for their classmates. Any of these difficulties can lay the groundwork for life-long patterns of frustration, rebellion and self-fulfilling expectations of failure.

The traditional mode of treatment for these high-risk children consists primarily of psychological testing and psychotherapy. But the numbers of available mental health professionals simply are not sufficient to meet the ever-increasing need for their services, and recent funding cutbacks at the Federal, state and local levels have reduced even further the amounts and varieties of services that can be extended. Traditional methods of treating school adjustment difficulties also carry with them at least one serious drawback: The risk that the children consequently will be labeled deviant or inadequate by teachers and peers.

The need, then, is clear: To find cost-effective ways of preventing the onset of destructive behaviors without stigmatizing the children involved, and dealing with early manifestations of such behaviors before they become entrenched. In response to this need, a team of investigators from DePaul University has undertaken a unique project designed to prevent problem behaviors in elementary school children. The project, part of the University Mental Health Center's Outreach Program, will impart new and exciting skills and enhanced status to a group of children, many of whom will need those advantages to succeed in an increasingly complex and competitive society. The setting is St. Mary of the Lake, a school located in Chicago's economically disadvantaged Uptown district. St. Mary's is academic home to children of 25 different ethnic backgrounds, many of whom come from broken homes.

In this project, 6th- through 8th-grade children are learning computer programming and tutoring skills, and 1st- through 4th-grade children are being tutored by the older students. Most were selected because of academic or behavioral difficulties they were experiencing in school. Some of these children who exhibit disruptive classroom behavior do so in order to draw attention away from real or imagined academic deficiencies. Others have problems such as poor attendance, low grades and shaky confidence, problems that might mask more serious troubles, and can prove as harmful to the learning process as can their more obvious counterparts.

The Comp-Tutor project began during the Fall Semester, 1982. In their twice-weekly meetings with DePaul investigators, the tutors first were taught about computers and their various functions. Next they graduated to training in computer entry and programming in the BASIC language, and in a very short time were able to write basic question-and-answer programs. At that point they demonstrated their favorite programs to their classmates, who were duly impressed.

Now they have progressed to more sophisticated techniques, such as the manipulation of computer graphics symbols. The students create lists of program statements designed to make their symbols appear and move in appropriate directions, following logical principles they have learned for this purpose. Next, they run their programs to see what effects those statements really have. Then they re-enter their program lists to make corrections and modifications.

Computer programs are based on logical principles. Consistent use of these principles can help children explore and expand their problem-solving skills. Programs also require careful planning and absolute attention to detail, capacities children often do not develop sufficiently in traditional classroom settings, but ones that will be of great assistance to them throughout their lives. In addition, the programming and computer entry skills themselves will give these children considerable advantage in a job market geared toward a technology that grows more sophisticated every day.

The goal for this year's project is to enable each budding programmer to design an entirely new educational game, combining basic question-and-answer functions with the manipulation of graphics symbols. For some of these students, this will include exploration of various mathematical principles and their uses in programming. Judging from the programs created during the first phase of the project, the educational games are likely to be diverse and highly entertaining. With a wide range of subject matter-- from football to World War II-- and a series of provocative questions ("Are you a rainmaker? Are you a pied piper?), even those early programs reflected the strengthening of yet another aspect of these children's academic lives: their imaginations.

In Comp-tutor, the supervisors have encountered none of the rebellion or reluctance to learn that teachers so often receive from troubled students. In fact, often their greatest challenge is slowing the children down to a pace at which they can absorb all the details. They cite the case of Ricky, a tutor who entered the project wanting to be able to do everything right away, not paying attention to details. The computer has helped Ricky settle down and concentrate on the learning process. Now he brings a pocket calculator to school to aid him in his formulation, and often he uses his mother's typewriter at home to spruce up new programs.

Many of the tutors previously were reputed to be slow learners and disruptive students. Before the program started some of the children's names were mentioned to various teachers, and the teachers expressed concern that project leaders would have considerable difficulty with them. But programming lessons with these students have provided a pleasant surprise: They consistently exhibit genuine cooperation and enthusiasm. The school's principal and teachers also are enthusiastic about the project. They are pleased with the progress their students have made, and excited by the prospect of having an increasing number of trained computer operators in the school.

The tutoring experience is another great boost to the students' feelings of self-worth. Here children who might have believed they needed help-- or were beyond help-- suddenly are placed in a situation where it is their responsibility to help others, younger children who with their assistance can avoid many of the pitfalls the tutors encountered in their early academic years. Students accustomed to concentrating on their own deficiencies often assume this new, generous role with pride, learning for another's

sake what they never bothered to learn for their own. Approaching the subject matter from an entirely new direction, tutors find their perspectives expanded and their grasp of the material strengthened.

During each session, the tutors spend 20 minutes working on their own programs, using a Commodore 64 microcomputer. Then each tutor spends the next 20 minutes helping a younger student operate a Vic-20 microcomputer, using a learning program purchased for the project. In the session described below, a 3rd-grader named Pedro tests his math and language skills, under the supervision of his 7th-grade tutor:

Pedro chooses to start his session with Dragstrip Math, his favorite of the available learning games. Dragstrip Math allows the user to choose questions at one of six levels of difficulty. He plays it safe this time, choosing a lower level. Each time Pedro answers a math question correctly his race car-- a stubby little graphics symbol that looks suspiciously like a Volkswagon-- advances one more notch toward the finish line. Entry of a wrong answer prompts a screen display of the correct response, but no progress in the race. For a greater challenge, Pedro begins working on the Sentence Quiz. Asked to choose which of three sentences is structured properly, he enters the number of what he believes is the correct sentence. When Pedro has selected the right answer, the screen flashes a triumphant "CORRECT!" Each incorrect entry elicits the words "THAT IS THE WRONG ANSWER. TRY AGAIN." Pedro leans in closer to the screen a moment, backs away, then drops a tentative finger on another key. "CORRECT!"

Correct answers also elicit words or exclamations of encouragement from his tutor. Pedro is receiving a consistent degree of attention and positive reinforcement his regular teacher cannot hope to provide in class.

Each child's combination of academic strength and weakness is unique, so the most effective mode of teaching is one directed toward the individual child. In addition, tutors are encouraged to form supportive "big brother" or "big sister" relationships with their pupils, helping them with the many academic and social problems children encounter.

One of the computer's greatest attractions is its capacity to absorb the students' attention. Not only is the terminal reminiscent of children's long-time mentor the television screen, but computer entry itself is fun. The computer's responsiveness, its seemingly inexhaustible memory and its willingness to follow the user's directions all hold a great fascination for children.

Selection of educational software for current tutoring sessions was based on a variety of tests, and on a series of meetings between DePaul supervisors and the individual students' teachers. Frequent progress sessions with teachers ensure that the material used remains current with each child's educational needs. Project supervisors also are scheduling a series of home demonstrations. The microcomputers used in the project will be taken to the students' homes, so their families can appreciate fully this aspect of their children's academic development.

The project's overal goal is ambitious, but attainable: to create an ongoing, self-sustaining computer-assisted tutoring program at St. Mary of the Lake. It is primarily with this aim in mind that the project coordinators have begun training younger programmers. They hope these children eventually will pass their knowledge and skills on to still younger students-- possibly the children they are tutoring now-- who in turn will train future tutors and programmers. Part of the project's goal is an ongoing computer club at St.

Mary's, in which a heterogeneous group of students (including children who are doing well in school as well as the ones experiencing difficulties) will serve as tutors, helping younger children overcome early problems.

Comp-Tutor is one of many projects initiated in recent years by the DePaul Mental Health Center. The Center has launched several innovative programs aimed toward prevention of academic and behavioral problems in local elementary and high school students. In some of these projects peer-tutoring has been used to help students strengthen their academic, social and problem-solving skills. In others, children have helped create films aimed toward increasing their awareness of the hazards linked with smoking, alcohol and drugs. Another project has provided training and assistance to a large group of studen : entering a new school. Other groups of children have been taught interpersonal problem-solving skills , and a parent-training program was implemented in a local high school.

Both the University-based research teams and school personnel contributed to the fomulation, implementation and evolution of these intervention programs. Undoubtedly, development of such outreach projects has been facilitated by the relationship of mutual trust that exists between the schools and the University's Mental Health Center.

Given the paucity of trained mental health workers, current staggering demands and exponential growth in the recognized need for their services, educators and mental health professionals clearly need to give serious consideration to alternative models for delivery of these services. This article has described an alternative conceptual model for school mental health professionals who otherwise might work exclusively on a one-to-one basis with adolescents experiencing social, behavioral and academic deficiencies. Prevention programs and early interventions have much greater potential to meet the vast need that exists in our communities.

Schools, like all social institutions, are characterized by predictable behavioral patterns. In exploring preventive interventions, school mental health professionals will need to examine these normative patterns and expectations closely. In future decades, preventive-oriented professionals will be faced more and more with the task of accommodating evolving technologies, including sophisicated computer systems and programmed learning material geared toward the individual student.

Mental health professionals can contribute much to current and future effors to redefine the functions and purposes of school systems, which might become increasingly decentralized and integrated within the fabric of community settings. Preventive school practitioners and theorists have a unique role to play in blending current and future priorities, finding innovative ways to carry on existing practices and introducing school personnel and community members to unexplored potentials within school settings. Increasing numbers of children have much to gain from these efforts, and even more to contribute to their communities.

Footnote

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